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practically the way in this can be done on a chart is much simpler.

Every great circle through a place passes through the antipodes of that place. Now, suppose we have a stereographic projection of all the sphere except the south polar region; the north pole being the centre of projection, and we wish to find the great circle course between any two stations:—We find these two stations on the map, and we find the antipodes of *one* station; then a circle carried through these three points is the great circle required.

It would not be necessary to make any construction for determining the centre of the circle through the points. A few moments' trial with a rod-compass would give the circle quite as exactly as the usual construction. I may remark, however, that a useful addition might be made to mathematical instruments, in the form of a ruler by which a cross-line bisecting any given line at right angles might be drawn without any construction. Many forms will suggest themselves. One of the simplest and most convenient is founded on the property that the diagonals of a rhombus bisect each other at right angles. Very likely such instruments are made.

In such a projection as I have spoken of, there would be no occasion to include any regions south of the 50th or 55th parallel of south latitude. Nor need lands and seas be marked in unless it were convenient. If only the meridians (radial lines) and latitude lines (concentric circles) were marked in to every 5th degree (or to every degree, if need were) the deduced great circle course could be transferred in a few seconds to the Mercator's chart, supposed to be similarly divided.

## *Comet II.*, 1869.

(Tempel's, see p. 27.) The following elements calculated by M. Leveau from observations at Leipzig, 23 October, and Vienna, 13 and 31 October, are given *Astron. Nach.* No. 1783.

$$T = 1869,\ \text{Oct. } 9,\ 55102,\ \text{Paris M.T.}$$

$$\left.\begin{array}{rrrr} & {}^\circ & {}' & {}'' \\ \pi = & 139 & 20 & 43\cdot6 \\ \Omega = & 311 & 27 & 52\cdot0 \\ \iota = & 111 & 32 & 54\cdot0 \end{array}\right\}$$

$$\log q = 0\cdot090056$$

The mean observation is represented as follows,—

$$O - C;\ \Delta\lambda = +0''\cdot5,\ \Delta\beta = +1''\cdot6.$$

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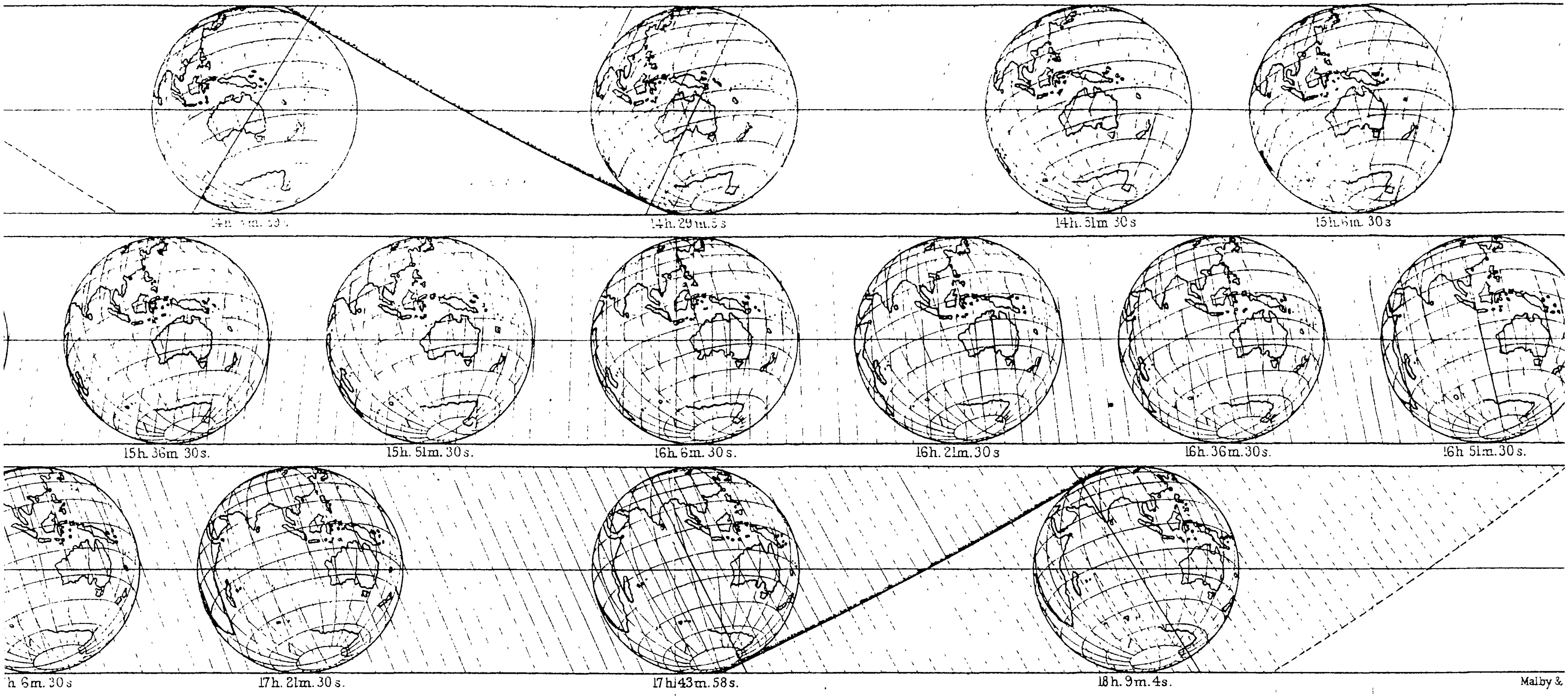
# PASSAGE OF THE EARTH THROUGH VENUS'S SHADOW-CONE. DEC. 8, 1874.

seen from Sun →



The cross-lines radiate from the centre of the circular section of the Shadow-cone, so that, for places on the same line, the relative parallactic displacement of Venus is along a radius of the Sun's disc.

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